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The Determinants of Multiple Forms of Controls in Foreign Subsidiary Manager Evaluations

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Abstract: This study explored how the determinants of financial, nonfinancial and behavioral controls vary in foreign subsidiary manager performance evaluations. Possible impacts of the following factors were analyzed: extent of geographical dispersion, decentralization and perceived environmental changes. Hypotheses were tested, using principal component and multiple regression analysis, with data collected from annual reports and from 103 top managers from a wide range of Finnish business unit headquarters. The results suggest that in MNCs top management's emphasis on financial controls tends to remain very high regardless of the contingencies analyzed. However, the data support several regularities between the factors examined and nonfinancial controls in particular, and behavioral controls to a smaller extent. This, in turn, leads to variations in the relative emphasis on financial controls.

Keywords: Management control systems, Output control, Behavioral control, Managerial performance evaluation, Multinational companies, Survey.

1 Introduction

Much management research has focused on the reliance on financial evaluations in multinational settings, where organizations are challenged by the need to manage geographically dispersed foreign subsidiary managers.[1] Likewise, an extensive accounting literature has examined reliance on accounting performance measure (RAPM) in managerial performance evaluations in domestic settings, and research on nonfinancial control has been growing.[2] However, empirical evidence on wider management control systems is still sparse, despite the fact that such systems have been implemented in practice. This study complements existing literature by systematically examining how the determinants of multiple forms of controls vary in foreign subsidiary manager performance evaluations. The determinants selected comprise both more novel and traditional contingencies, but from the perspectives of multinational companies (MNCs). The following variables were simultaneously examined as possible determinants: extent of geographical dispersion of foreign subsidiaries, decentralization of decision-making rights to foreign subsidiary managers, and perceived environmental changes (PECs) in foreign subsidiaries.

Following prior empirical studies by Abernethy and Stoelwinder (1995), Abernethy and Brownell (1997), Kennedy and Widener (2005), and Kihn (1997, 2001, 2007), this study makes a distinction between output controls and behavioral controls. The examined financial and nonfinancial 'output' and 'behavioral' controls are used synonymously with 'results' and 'action accountability' controls (Merchant and Van der Stede, 2007). These two forms of control differ from each other in important ways. By definition, the object of output controls is a financial or nonfinancial outcome or result. Hence, output controls empower employees to take the actions they believe will best produce the desired results. In contrast, the purpose of behavioral controls

is to ensure that employees take only desirable actions. Behavioral (action accountability) controls involve holding employees accountable for the actions they take in accordance with predetermined rules, procedures, policies, contract provisions, and company codes of conduct (Merchant and Van der Stede, 2007). In addition to analyzing absolute emphasis on these controls, the study also addressed emphasis on financial controls relative to nonfinancial and behavioral controls (i.e., relative emphasis on financial controls).

Performance evaluations of managers of foreign subsidiaries were analyzed primarily with explorative factor analysis and multiple regression analysis using data collected from annual reports (n=90) and scores collected from 103 (59% response rate) top managers from a wide range of Finnish business unit headquarters (HQs). Data of the frequency and geographical dispersion of foreign subsidiaries were collected from annual reports; the rest of the data were collected with a mail survey. Overall, the MNCs examined had established or acquired foreign subsidiaries worldwide. The foreign subsidiary managers included both managers on foreign assignments and host country nationals.

The empirical results contribute to research on MNCs and to accounting literature. First, given that the literature has traditionally focused on financial controls, finding a very high emphasis on such controls in MNCs, there has been little information about exactly how other types of controls are emphasized, and what determines it. Second, literature on the relative use of performance measures and its determinants has still been fairly limited (Ittner and Larcker, 1997; Keating, 1997; Kihn, 1997, 2001).

The multiple regression results of the study further our understanding of the contingent nature of management control by showing how a combination of situational factors simultaneously impacts the emphasis placed on each of the types of controls. While examined determinants get at least some empirical support, the data also help to identify what types of contextual factors appear to be the most important determinants and what types of simultaneous effects they can have on the emphasis of controls. Taken together, the results support the expectation that, overall, the absolute emphasis of business unit HQs on financial controls tends to remain very high, but that there can be situational variations in the emphasis placed on nonfinancial and behavioral controls, and consequently, situational variation in the relative emphasis on financial controls. Whilst these results are based on a sample of MNCs headquartered in Finland, they should further understanding of managerial performance evaluations of MNCs in general.

The remainder of this study is organized as follows: First, prior literature and hypotheses to be explored are introduced in the next section. Second, the sample and methods employed are described. Third, the statistical findings are analyzed. Finally, the conclusions are presented.

2 Prior literature and hypotheses development

The generic theory relating to the relative use of various forms of controls suggests that output controls are ideally used when managers have knowledge of, and ability to affect, desirable outputs, and the ability to measure controllable outputs in an effective way (Thompson, 1967; Ouchi, 1979). Being effective means that measures should be reasonably precise, objective, timely, understandable, and cost-effective. In being indirect (i.e., not focusing explicitly on the employees' behavior), output controls can be effective when it is not clear what behaviors and actions are most desirable. In contrast, the effective use of behavioral controls in managerial performance evaluations requires that managers know what actions are desirable (or undesirable), and have the ability to track the behaviors that employees engage in to ensure that the desirable actions take place (or that the undesirable actions do not) (Merchant and Van der Stede, 2007).

Prior research on MNCs has primarily examined the reliance on and importance of financial output controls. The predominant finding has been that the same financial controls, such as return-on-investment and profit, are used in evaluating foreign and domestic operations. This result has been obtained in studies on U.S. MNCs[3], in surveys comparing U.S. and European MNCs (Choi and Czechowicz, 1983), for U.K. companies (Appleyard, Strong, and Walton, 1990), and for Finnish MNCs (Björkman and Lindqvist, 1991; Hassel, 1991; Kihn, 2007).

Certain differences have also been found between U.S. and European MNCs, as well as among European companies. Schoenfeld (1986) documented that U.S. MNCs apply financial controls to a greater extent than the European MNCs examined thus far. Egelhoff's (1984) field study proposed that U.S. MNCs rely strongly on quantifiable and objective aspects, while European, including U.K., MNCs emphasize behavioral and qualitative criteria and staff their foreign units with expatriates. Horovitz (1978, 1980) and Coates et al. (1991) found that financial controls were more strongly emphasized by U.K. companies than by German and French companies, some of which place greater emphasis on nonfinancial controls such as production controls or market shares. According to Björkman and Lindqvist's (1991) findings, financial controls were considered to be the most important measures in Finnish MNC, while informal evaluation and managers' ability to adhere to budgets were also assessed. Kihn's (1997) empirical results on Finnish MNCs showed that, overall, financial control was the most important form of control in foreign subsidiary manager performance evaluations, followed by nonfinancial and behavioral controls.

As discussed below in greater detail, it is expected here that top management's absolute and relative emphasis on financial, nonfinancial and behavioral controls in managerial performance evaluations may vary with regard to a number of situational factors, the first one being the extent of geographical dispersion of foreign operations. Note that MNCs are not only organized by function and product line, but also by geography. As the geographical dispersion of operations to various parts of the world increases, MNCs typically face greater geographical and cultural distances, barriers of time zones and language, as well as local differences.

This study expects that the geographical dispersion of operations to various parts of the world mostly limits the emphasis on behavioral controls. Even if modern information technologies have made communication between HQs and foreign subsidiaries with great geographical and cultural distances somewhat easier, it still is difficult. In MNCs, top management cannot easily visit foreign subsidiaries. Therefore, the cost of behavioral controls rises significantly with geographical dispersion (Merchant and Van der Stede, 2007).

In contrast, increasing geographical dispersion is unlikely to limit effectiveness, in particular, understandability, timeliness, and cost, of output controls as much as that of behavioral controls – at least from the viewpoint of HQs. When geographically dispersed, various parts of an organization are often more likely to employ multiple and diverse sets of nonfinancial controls. Therefore, HQs' use and emphasis on nonfinancial controls is expected to increase with increasing geographical dispersion.

With increasing geographical dispersion, HQs' emphasis on financial controls is not likely to change, but to remain high. Financial controls are reasonably effective, and often the only source of quantitative information integrating the results of all the different parts of an organization, thereby allowing comparison of the results of various managers and geographical units in terms of a single dimension (Emmanuel et al., 1991, p. 6-7). Prior research has documented that MNCs generally place a very high emphasis on financial

controls. Therefore, MNC's emphasis on financial controls cannot necessarily increase (or decrease), but is likely to remain very high despite increasing (or decreasing) geographical dispersion. In conclusion, with increasing geographical dispersion, HQs of MNCs may increase their emphasis on nonfinancial controls and decrease their emphasis on behavioral controls. Such adjustments are likely to lead to a higher relative emphasis on financial controls.

Decentralization is the second contingency variable addressed in this study. It refers here to the level of decision-making autonomy delegated to foreign subsidiary managers. Since only foreign subsidiary managers mostly possess the necessary intimate awareness of the circumstances surrounding the local operations, the right to make operational decisions has often been delegated to those managers. According to Bartlett and Ghoshal's (1998) study on Asian, European, and U.S. MNCs, this has often been the case in European-based MNCs, where foreign subsidiaries are typically autonomous units (profit or investment centers) and not subject to intense HQ coordination.

Several studies have found decentralization to enhance the use of financial control (e.g., Bruns and Waterhouse, 1975; and Vancil, 1979), and budgets (Merchant, 1981). This may be because managers of decentralized organizations perceive aggregated and integrated information as useful: managers prefer to be evaluated on performance measures that are aggregated and integrated in ways that reflect their area of responsibility (Chenhall and Morris, 1986). When a company consists of relatively autonomous subunits, financial controls also provide relatively precise estimates of the performance of managers, which makes their use more appropriate (Abernethy, Bouwens, and van Lent, 2004).

Given that decentralization of decision-making also increases information asymmetry between top management and subordinate managers (cf., Abernethy et al., 2004), it may become more difficult to rely on nonfinancial controls, in particular if the businesses and measures are not the same throughout the decentralized units. Given high information asymmetry, top managers' knowledge of local operations and abilities also gets limited. Therefore, top management in the business unit headquarters is not in a position to know when good judgments have been exercised. It limits the effectiveness of behavioral controls (Merchant and Van der Stede, 2007). In conclusion, in MNCs the emphasis placed on financial controls is expected to remain very high with decentralization. However, decentralization of decisions is likely to decrease the emphasis on nonfinancial and behavioral controls, and consequently, to lead to a higher relative emphasis on financial controls. A positive association between the level of decision-making decentralization and relative emphasis on financial controls has been found by Kihn (1997, 2001).

Perceived environmental changes comprise the third situational factor of this study. Environmental changes may occur in external aspects of foreign subsidiaries related to customers, distributors, governments, technical developments, supply sources, and competitors, as well as in internal environments. The effects of these specific environmental factors are still largely unknown, but as studies by Khandwalla (1972) and Ittner and Larcker (1998) have indicated many of these, such as competitors and customers, are highly important external factors. Whilst some aspects of PECs can become highly predictable over time, PECs are typically assumed to be associated with high levels of uncertainty, which in turn can impact managerial performance evaluations.

Galbraith's (1973) theory, discussed in detail in Chapman (1997) suggests that uncertainty reflects an information deficit, and hence increases the need for information. The strategies for resolving this problem should revolve around giving attention to the way in which

organizations process information. In addition to increasing the amount of interaction between managers, this could include the use of several sources of (less than perfect) control information. Therefore, HQs' emphasis on output and behavioral controls should increase, or at least remain high in the case of MNCs, with increasing uncertainty.

Hassel's (1991) survey of a Finnish MNC reported a high reliance on accounting performance measures (APMs) regardless of what was called "environmental dynamism". HQs were reported not to have other alternatives than to place a high emphasis on APMs when they needed tight monitoring, because such controls are most cost-effective for MNCs faced with great geographical and cultural distances. To a certain extent, this might also be the case with other forms of controls. While prior studies have not typically empirically explored the extent of emphasis on behavioral controls under conditions of increasing uncertainty, there is evidence to suggest that managers generally increase the emphasis on nonfinancial controls in such circumstances (Govindarjan, 1984). Gordon and Narayan (1984) have reported the importance of future- oriented information to managers in uncertain conditions. Chenhall and Morris (1986) found that perceived environmental uncertainty was associated with timely information of broad scope, including nonfinancial information. The results reported in Kihn's (2007, 543) correlation table suggest positive associations between PECs and nonfinancial and behavioral controls in a sample of 36 business units of Finnish based MNCs. The current study further explores whether top management's emphasis on nonfinancial and behavioral controls increases with increasing PECs in a large sample of Finnish based MNCs. Such increases would, in turn, lead to a lower relative emphasis on financial controls.

In summary, it is expected that in MNCs, top management's absolute emphasis on financial controls tends to remain high towards the contingencies examined, but that their relative emphasis on such controls can be adjusted owing to situational variations in the emphasis placed on nonfinancial and behavioral controls. The following hypotheses summarize the possible simultaneous effects of the various situational variables on foreign subsidiary manager evaluations in MNCs that will be empirically explored in this study (see Table 1):

H1: The emphasis placed by HQs on nonfinancial controls in evaluating foreign subsidiary managers is positively related to geographical dispersion and PECs, and negatively related to decentralization.

H2: The emphasis placed by HQs on behavioral controls in evaluating foreign subsidiary managers is positively related to PECs, and negatively related to geographical dispersion and decentralization.

H3: The relative emphasis placed by HQs on financial controls in evaluating foreign subsidiary managers is negatively related to geographical dispersion and PECs, and positively related to decentralization.

[Insert Table 1 about here]

3 Method

3.1 Sample

The data of this study was collected from the headquarters of Finnish based MNCs. This approach was feasible and appropriate given that the study is interested in the viewpoints of top managers at the business unit headquarters. Scores collected from top management (i.e., not from foreign subsidiary management) allowed direct measurement of top management's evaluations.

The target sample of the study comprised the entire population of 102 industrial, banking, and consulting MNCs in Finland. In all of these companies, the Finnish parent company held at least one foreign manufacturing, banking, or consulting subsidiary with a more than a 50% interest. Data were collected from annual reports, and by administering a cross-sectional mail survey.[4] The survey respondents were fixed by design, selecting for those in key positions to conduct performance evaluations of foreign subsidiary managers. These were typically business unit (or divisional) managers in larger diversified firms, and corporate directors such as financial directors, vice presidents, or presidents in smaller, single-business firms. One respondent was selected from each business group (or division). The respondents were identified based on telephone calls, and information derived from annual reports.

The questionnaire was pre-tested three times in a sample of thirteen academic experts and practitioners in order to improve content and construct validity, reliability and objectivity of the data. Afterwards, a total of 176 questionnaires were distributed by air mail to the 102 companies. Dillman's (1978) total design method was used to boost the response rate. The initial request and three follow-ups yielded 103 usable responses, representing approximately 59% of all mailed surveys. The number of usable responses per qualifying target population was even higher (about 68%), since some of the targeted respondents no longer met the criteria of the survey for the following reasons: mergers, lack of active operations, lack of active foreign operations, extensive restructuring, the appropriate contact persons were not Finnish speaking, or the questionnaire did not reach the qualifying contact person due to layoffs, long-term illnesses or organizational restructuring. The sample reduction process is presented in Table 2.

73 respondents, representing 41% of the original 176 questionnaires (and about 32% of the qualifying target population) did not respond. Note that the reasons for not responding were also investigated. The identified reasons, such as being too busy and the size of overseas operations being too small, although not necessarily comprehensive, did not indicate a systematic bias in the actual sample.

[Insert Table 2 about here]

How representative the actual sample is, was analyzed with regard to selected key variables (such as proxies of the extent of the firm's international business, broad industry sectors, and gender of respondents) using 2-sample t-tests and the chi-square goodness-of-fit-test. The actual and target sample did not differ significantly in regard to those variables at 0.05 significance level suggesting an absence of response bias.

On average, the participants were around 49 years old. They had worked for their current company for an average of fifteen years. Table 3 summarizes the industrial sectors and industries that the respondents represented. Given the diversity of industries, there is no expectation of any systematic bias stemming from a particular industry in the findings.

[Insert Table 3 about here]

3.2 Measures

Appendix 1 detailes the English version of the survey questions. The first set of questions (items 1a-1e) are related to controls, the second set of questions to the extent of decentralization, and the third and final set of questions to PECs. Data of the frequency and geographical dispersion of foreign subsidiaries were collected from annual reports.

Controls The dependent variable assesses the extent to which senior managers at headquarters emphasize financial, nonfinancial, and behavioral controls in the performance evaluation of foreign subsidiary managers. Senior managers' perceptions were assessed with five-item five-point Likert scales. Specific examples of the controls were provided. Financial controls were defined to include, e.g., profit, return-on-investment, and residual income. The examples of controls for nonfinancial outcomes were market share, quality, and production volume. The following examples of behavioral (action accountability) controls were provided: *achieve* cost budgets & production standards, *follow* rules & procedures, and *propose* expenditure programs.

Applying Keating's (1997) questions on managerial performance evaluation, the respondents were asked to indicate: 1) the importance of controls in the evaluation of foreign subsidiary manager performance; 2) the frequency with which meetings are arranged with foreign subsidiary managers to discuss their performance on the controls; 3) the extent to which controls are considered to reflect the successful efforts of the subsidiary managers; 4) the attention paid by senior management to the periodic results of controls, and 5) the impact of good or poor results measured on the controls on managers' rated performance.[5] Each item was rated on a scale ranging from (1) not at all (not at all important) to (5) very much (very important). The values obtained for the five questions above were averaged for each measure. Low average values on the 1-5 scale indicate a low emphasis on controls, and high average values indicate a high emphasis. The Cronbach (1951) alpha statistic of internal reliability was 0.84 for the emphasis of financial controls, 0.79 for the emphasis of nonfinancial controls, and 0.83 for the emphasis of behavioral controls. These values are acceptable (Nunnally 1978).

The descriptive statistics in Tables 4 and 5 show that while few responses scored around 2.5. (i.e., well below the mean), all the controls investigated were generally perceived to be emphasized to a very high extent. All the mean scores for financial controls (4.48) were higher than those of either the nonfinancial controls (4.23) or behavioral controls (3.89), and the mean scores of nonfinancial controls were higher than those of behavioral controls. All of these differences in means were statistically significant at the 0.000 level suggesting systematic differences in managers' responses to questions.

[Insert Tables 4 and 5 about here]

The geographical dispersion of overseas operations was assessed in terms of whether the business unit has overseas subsidiaries in Europe (coded as 0) and/or outside Europe (coded as 1). Objective archival data collected from annual reports allowed this kind of analysis. 48.4% of the business units (or single business companies) have foreign subsidiaries only within Europe. However, most of them (51.6%) have foreign subsidiaries also outside Europe, i.e. world scale operations.

As Table 6 shows, *the degree of decentralization* was measured by applying a slightly modified version of Vancil's (1979) well-tested instrument, which is rooted in the Aston Group approach (see Pugh, Hickson, Hinings, and Turner, 1968; Merchant, 1981; Chenhall and Morris 1986). The executives were asked to indicate "to what extent decisions are delegated to foreign subsidiary managers" on a five-point ordinal scale ranging from (1) "not at all" to (5) "totally" (see question no. 2 in the attached survey). Principal component analysis suggested five factors with Eigenvalues over one.

The first component includes five items, which can be interpreted as *decisions about prices and expenditures.* It has an Eigenvalue of 3.126, and explains 18.4% of the variance. The second factor comprises four items, can be called as *decisions about personnel*, and it explains 17.5% of the variance. The third factor includes four items, and it can be interpreted

as *product decisions.* It has an Eigenvalue of 2.2, and explains 13.0% of the variance. The fourth factor includes two *decisions about consultants*. It has an Eigenvalue of 1.97, and explains 11.6% of the variance. The fifth factor is interpreted as *decisions about vendors.* It includes two items, and explains 11.3% of the variance. Cronbach alphas are acceptable: 0.86, 0.85, 0.71, 0.87, and 0.81, respectively.

[Insert Table 6 about here]

The rate of perceived environmental changes was measured with a 14-item five-point measurement instrument (see question no. 3 in the attached questionnaire). This instrument asks the respondents to rate the experienced rate of change regarding customers, distributors, government relations, technical developments, supplies from capital, raw material and labor markets, competitors' actions, impacts of interdependency and company policies, and overall environmental changes. The five-point scale ranges from (1) "never" to (5) "very often". The lower the score, the lower the perceived degree of environmental changes in overseas subsidiaries, and *vice versa*. The selected instrument is similar to the one used by Hassel (1991), except that to simplify measurement the respondents were not requested to rate the items as either critical or non-critical to their decision making. Instead, a principal component analysis was conducted to analyze the structure of the first 13 variables.

As Table 7 shows, the principal components analysis with a varimax rotation suggested four components with statistically significant loadings of 0.55 and above. The first component includes five items and is interpreted as perceived *changes in competitors' actions.* It has an Eigenvalue of 3.52, and explains 29.35% of the variance. Three items load to the second component. It is called *changes in customers, distributors, and governments*. The component has an Eigenvalue of 1.58, and explains 13.2% of the variance. The third component includes two items explaining *changes in supply sources*. The Eigenvalue of this component is 1.32 and it explains 10.96% of the total variance. The fourth and final factor has two items. They are related to *changes in internal environments*. The component has an Eigenvalue of 1.07, and it explains 8.95% of the variance. The Cronbach reliability alphas for summative scales were mostly acceptable (i.e., 0.78, 0.64, 0.60, and 0.40, respectively).

[Insert Table 7 about here]

Control variable.

The size of corporation was approximated with the volume of sales. The most recent public domain sales figures available from the whole corporation were adopted. On average the sales of the investigated companies amounted to 437.3 million euros, ranging from 2.5 million euros to 7,551 million euros at the time of the research.

Table 8 shows Pearson correlations for the investigated variables. The main results from Table 8 were that positive and relatively high and statistically significant associations were found between the controls, and positive and statistically significant associations were found between nonfinancial controls and geographical dispersion (0.209, $p<0.05$), and between nonfinancial controls and changes in competitors and technical developments (0.267, $p<0.01$). All the other associations between the controls and the contingency variables were not statistically significant.

[Insert Table 8 about here]

4 Results and analysis

Multiple regression analysis was used to test the three hypotheses, which expect that HQs' emphasis on various forms of controls may vary with the contingencies selected. Multiple

regression analysis was selected, since it is a powerful and robust tool to analyze the relationship between a single dependent variable and several independent variables, including principal components (Hair, Black, Babin, Anderson, and Tatham, 2006, p. 176).[6] Note that each of the three hypotheses of this study had a single dependent variable and multiple independent variables. The following linear regression model was used:

$$Y = b_0 + b_1 GEO + b_2 DEC_1 + b_3 DEC_2 + b_4 DEC_3 + b_5 DEC_4 + b_6 DEC_5 + b_7 PEC_1 + b_8 PEC_2 + b_9 PEC_3 + b_{10} PEC_4 + b_{11} SIZ + e$$

where Y_{1-4} =	Emphasis on financial (/nonfinancial/behavioral/relative financial) controls to evaluate foreign subsidiary managers
b_{0-11} =	Estimated parameters
GEO =	Geographical dispersion of overseas subsidiaries
DEC_{1-5} =	Decentralization of decision rights (principal components)
PEC_{1-4} =	Perceived environmental change (principal components)
SIZ =	Size
e =	Error term

A key expectation of this study was that emphasis placed by HQs on financial controls in evaluating foreign subsidiary managers is not significantly related to geographical dispersion, decision making decentralization, or PECs. As the multiple regression analysis results in the first column of Table 9 show, the data of this study do not suggest statistically significant effects. All the observed coefficients between financial controls and the examined contingencies were close, or fairly close, to zero and statistically insignificant.[7] Hence, as expected, the data suggest that top management in business units emphasizes financial controls, regardless of variations in the contingencies examined.

[Insert Table 9 about here]

4.1 Hypothesis 1

Hypothesis 1 tests whether HQs' emphasis on nonfinancial controls in evaluating foreign subsidiary managers is positively related to geographical dispersion and PECs, and negatively related to decentralization. As the second column in Table 9 shows, the emphasis placed by HQs on nonfinancial controls is positively associated with geographical dispersion (t=1.79, p=0.077). The results further suggest that one of the analyzed decision-making factors, product decisions, produced a negative and statistically significant effect regarding HQs' emphasis on nonfinancial controls (t= -2.17, p=0.033). Perceived changes in competitors' actions and in customers, distributors, and governments is reflected by a statistically significant increase in the emphasis placed on nonfinancial results controls (i.e., t=2.34, p=0.021; and t=2.16, p=0.034). The other environmental factors do not show statistically significant effects. Finally, the emphasis on nonfinancial controls was negatively associated with organizational size (t= -1.90, p=0.061). These results provide partial support for the first hypothesis.[8]

4.1 Hypothesis 2

Hypothesis 2 explores whether HQs' emphasis on behavioral controls in evaluating foreign subsidiary managers is positively related to PECs, and negatively related to geographical dispersion and decentralization. As shown in the third column of Table 8, geographical dispersion does not appear to be related to the emphasis on behavioral control. However, the decentralization of decision-making with respect to prices and expenditures is negatively related to the emphasis on behavioral controls (t= -2.14, p=0.036). PECs in customers, distributors, and governments also seem to be negatively related to the emphasis placed on

behavioral controls (t= -2.13, p=0.036). These results provide partial support for the second hypothesis.[9]

4.3 Hypothesis 3

The third hypothesis predicts that the relative emphasis placed by top management on financial controls in evaluating foreign subsidiary managers is negatively related to geographical dispersion and PECs, and positively related to decentralization. The results in the fourth and final column of Table 9 suggest that the hypothesized effect of geographical dispersion is not supported. A positive and statistically significant association between the relative emphasis on financial controls and decentralization of decision rights with regard to prices and expenditures is found (t=2.39, p=0.006). This strong effect appears to be due to a decreasing emphasis on behavioral controls for such decision rights (as the second column of Table 9 shows). The effects of the other decision rights are not supported. All the effects of PECs are negative, as expected. Two of the effects are also statistically significant, notably PECs in competitors and PECs in supply sources. The first effect appears to be due to increasing emphasis on nonfinancial controls with increasing PECs in competitors. The relative emphasis on financial controls is positively related to corporate size (t=2.36, p=0.021). This appears to be due to variation in the emphasis on nonfinancial controls with increasing corporate size. In conclusion, all three hypotheses are partially supported to various degrees by the study results.

5 Discussion and conclusions

This study reports the findings of a detailed empirical analysis designed to further our understanding of how the determinants of financial, nonfinancial and behavioral controls vary in foreign subsidiary manager performance evaluations. In particular, the study contributed to the simultaneous analysis of the impacts of geographical dispersion of foreign subsidiaries, decision-making decentralization to foreign subsidiary managers, and perceived environmental changes (PEC) in foreign subsidiaries. The following main results have several implications for the researchers, designers and users of managerial performance evaluation systems in the context of MNCs.

First, the results clearly show variation in the determinants of the controls examined, and hence further understanding of the contingent nature of managerial performance evaluations. Contrary to prior results from domestic and single-country settings (e.g. Govindarajan and Gupta, 1985; Brownell, 1987), and as expected, survey data and additional documentary data from 90 participants suggested that financial controls are not adjusted towards the contingencies analyzed, rather, that they remain strongly emphasized in the MNCs investigated. This result, obtained from top managers of a wide range of Finnish MNCs, is in line with and extends Hassel's (1991) results on the effects of environmental contingencies on the RAPM. Hence, the results further support the theory that in MNCs, HQ do not have other alternatives than to place a high emphasis on financial controls, because such controls are most cost effective for MNCs faced with great geographical and cultural distances.

Second, several regularities were found between the factors examined and nonfinancial controls in particular, and between behavioral controls to a smaller extent. Top management's emphasis on nonfinancial controls was positively associated with the extent of geographical dispersion, PEC in competitors' actions, and PEC in customers, distributors and governments. The emphasis on nonfinancial controls was negatively associated with decentralization of product decisions. The emphasis on behavioral controls was also positively related to PEC in customers, distributors and governments, and negatively related

to price and expenditure decisions. These results are in line with Kihn (2007), which, among other things, documented positive associations between PECs and nonfinancial and behavioral controls in a smaller sample of 36 business units of Finnish based MNCs.

In the current study, detailed analysis of the various factors of PEC and decentralization helped in identifying what types of factors are the most important ones. The most important organizational factors in this study were decentralization of decision rights for products, which had a strong negative effect on the emphasis on nonfinancial controls; and decentralization of decision rights on prices and expenditures, which had a negative effect on the emphasis of behavioral controls. The most important environmental factors were PEC in competitors, and PEC in customers, distributors and governments, which were positively associated with the emphasis on nonfinancial and/or behavioral controls. The effects of geographical dispersion and corporate size on nonfinancial controls were marginally supported by the study. These results suggest that factor analysis could also be pursued in future research (i.e., whenever the sample size is large enough to allow such an analysis).

Third, the new evidence of this study also indicates variation in top management's relative emphasis on financial controls due to situational variations in the emphasis placed on nonfinancial and behavioral controls. The relative emphasis on financial controls is positively associated with decentralization of decision rights on prices and expenditures, and negatively associated with PEC in competitors' actions, corporate size, and PEC in supply sources (in that order of significance). To a large extent, the relative emphasis on financial controls appears to be a derivative of the emphasis on nonfinancial controls. These results extend the literature on the relative use of performance measures (Ittner and Larcker, 1997; Keating, 1997; Kihn, 1997, 2001). While the effects of company goals, transfer pricing, decentralization, and degree of multidomestic (/global) strategy have been empirically supported in previous studies (Kihn, 1997, 2001), these results increase the number of empirically supported contingency factors that seem to impact top management's relative emphasis on financial controls in the performance evaluations of foreign subsidiary managers.

The other factors tested as possible determinants were not empirically supported by the data of this study. The reasons for this may be theoretical, methodological, or empirical. First, the study was explorative in nature, since there was no well-developed theory in the topic area. Second, the exact consequences of multiple predictors are difficult to estimate in cross-sectional research. This is, because in combination multiple contingencies may have synergistic effects on each other that intensify the effects, or they may have opposite effects on each other that even-out certain performance outcomes (Chenhall, 2006). In the results, we may have seen a little bit of both. As an example of the former, nonfinancial controls had few statistically significant correlations with the contingencies examined, but multiple regression analysis suggested many more significant associations. As an example of the latter, the relative emphasis on financial controls was not significantly related to the extent of geographical dispersion, even if it was significantly related to the emphasis placed on nonfinancial controls. Third, culture may have played a role in the results given that the results of both Hassel's (1991) survey and this study are based on MNCs headquartered in Finland. Finally, some previous studies have also documented that the effects of contingency variables on questions examined were limited (Anthony et al., 1992). In short, human behavior is complex and can be influenced by many factors.

This study has certain limitations that should be mentioned. First, the study by no means represents an exhaustive identification of the determinants of control emphases for the evaluation of foreign subsidiary managers. It has merely identified some of the many situational factors that can affect top management's control choices. Further research could

be directed at identifying additional determinants; for example, compensation systems, various psychological, social and economic variables affecting the perceived choice and emphasis of controls. This would further our understanding of the individual and social differences and various evaluation styles that are present under similar circumstances, thus ideally leading to more effective design and use of managerial performance evaluation systems. Second, a number of organizational and environmental factors have been assumed as being exogenous to control emphasis. It is possible, however, that the extent of organizational factors and the emphasis on controls are determined simultaneously (cf. Keating, 1997, p. 267). Third, the survey instrument was designed to collect data of the simultaneous emphasis placed on financial, nonfinancial and behavioral controls. The respondents were not expected to rank the use of these types of controls in this study. Further surveys could ask managers to rank the competing ways to evaluate performance to see which one dominates. Fourth, these results may describe the situations of some, in particular Finnish, MNCs better than others. The results are nevertheless based on mean as opposed to any other type of value to create, on average, the least possible error. Fifth, response bias is possible, although attempts were made to control for it, and statistical results (on p. 9) did not reveal any. The limitations notwithstanding, the results have important implications for managerial performance evaluation systems and they suggest that much can be learned about the contingent use of multiple forms of controls.

Future research could be directed at analyzing the perceptions of foreign subsidiary managers. In addition, the study could be replicated in other countries. Finally, whether the results predict future could also be examined.

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Table 1 Summary of hypotheses

Hypothesized relationships between HQs' emphasis of nonfinancial controls, behavioral controls, and the relative emphasis on financial controls in the evaluation of foreign subsidiary managers and the extent of (i) geographical dispersion (i.e., whether the business unit has foreign subsidiaries outside Europe), (ii) perceived environmental changes, and (iii) decentralization of decision making rights.

Factor affecting control emphasis	*Hypothesis 1 Effect on nonfinancial controls*	*Hypothesis 2 Effect on behavioral controls*	*Hypothesis 3 Relative effect on financial controls*
Geographical dispersion	+	-	-
Perceived environmental changes	+	+	-
Decentralization of decision-making rights	-	-	+

Table 2 Sample reduction process

	Frequency of firms	*Frequency of participants*
Finnish corporations with at least one overseas subsidiary with an over 50% interest held by the Finnish parent:		
Manufacturing companies	83	154
Consulting companies	16	16
Banks	3	6
Total:	102	176
Less: Nonrespondents, because of		
Merged firms	8	0
Firms/divisions without active operations	1	2
Firms/divisions without active foreign operations	6	6
Firms with extensive restructuring	1	1
Firms/divisions without Finnish speaking key person	1	9
Contact person not reached	2	6
Total:	19	24
= Actually qualifying target sample	83	152
Less: Other nonrespondents	23	48
= Respondents	60	104
Less: An outlier		1
		103

Table 3 Respondents by industrial sectors and industries

Panel A: Industrial sectors	
Manufacturing	85%
Consulting	7 %
Banking	4 %
Panel B: Industries	
Metals	27.2%
Wood, paper or board	15.5%
Glass and steel	8.7%
Consulting	6.8%
Chemical	5.8%
Oil, coal or nuclear	5.8%
Plastic	5.8%
Food, drink, or tobacco	4.9%
Banking	3.9%
Textile, clothing, leather, or shoes	2.9%
Furniture	2.9%
Electronics, computer, etc.	2.9%
Printing	1.0%
Mining	1.0%
Energy and water	1.0%
Not available[1]	3.9%

[1] Four respondents did not use pre-coded return envelopes.

Table 4 Descriptive statistics

	Mean	*StDev*	*Theoretical range*	*Actual range*	*Cronbach alpha*	*N*
Superiors' emphasis of:[1]						
- Financial controls	4.48 [a, b]	0.55	1.00-5.00	2.40-5.00	0.84	103
- Nonfinancial controls	4.23 [b, c]	0.55	1.00-5.00	2.80-5.00	0.79	103
- Behavioral controls	3.89 [c, a]	0.69	1.00-5.00	2.20-5.00	0.83	103
- Relative financial controls	0.56	0.09	0.10-2.50	0.32-0.96		103
Number of foreign subsidiaries:						
- in North America	1.46	3.71	0-	0-32		92
- Europe	7.20	7.65	0-	0-36		92
- Asia	0.70	1.55	0-	0-8		92
- Australia	0.30	1.07	0-	0-9		92
- South America	0.12	0.57	0-	0-4		92
- Africa	0.03	0.18	0-	0-1		92
- In total	9.73	11.03	0-	1-58		93
- Outside Europe	0.52	0.50	0-1	0-1		93
- Size of sales (mEUR)	437.29	879.10	0-	2.50-7551		91

[1] Measured on a scale ranging from 1 (not at all/not at all important) to 5 (very much/very important).
[a] Significantly different from nonfinancial controls mean at 0.000 level.
[b] Sinificantly different from behavioral controls mean at 0.000 level.
[c] Significantly different from financial controls mean at 0.000 level.

Table 5 Emphasis on controls in the evaluation of foreign subsidiary managers[1]

	Financial controls		*Nonfinancial controls*		*Behavioral controls*	
	Mean[a,b]	StDev	Mean[b,c]	StDev	Mean[a, c]	StDev
1. Importance in the evaluation of foreign subsidiary manager performance	4.75	0.50	4.35	0.65	4.16	0.75
2. Frequency with which meetings are arranged with foreign subsidiary managers to discuss their performance on the controls	4.34	0.82	4.24	0.86	3.91	1.03
3. Extent to which controls reflect successful effort by the foreign subsidiary managers	4.38	0.78	4.24	0.69	3.93	0.87
4. Attention paid by senior management to periodic results of controls	4.52	0.62	4.19	0.78	3.63	0.94
5. Impact of good or bad results regarding the controls on foreign subsidiary manager's rated performance	4.38	0.76	4.12	0.75	3.82	0.89

[1] Measured on a scale ranging from 1 (not at all/not at all important) to 5 (very important/very much).
[a] The means in this column are significantly different from nonfinancial controls means at 0.000 level.
[b] The means in this column are sinificantly different from behavioral controls means at 0.000 level.
[C] The means in this column are significantly different from financial controls means at 0.000 level.

Table 6 Results of principal component analysis (loadings) of survey questions on decision-making decentralization. [a]

	Components:				
Decentralization of decisions about:	*Prices and expenditures*	*Personnel*	*Products*	*Consultants*	*Vendors*
1. Discontinuing a major product or product line	0.269	0.123	**0.688**	-0.026	-0.136
3. Expanding into new marketing territories	0.212	-0.086	**0.567**	0.399	0.041
4. Increasing capacity with a new investment	-0.074	0.101	**0.807**	-0.028	0.142
5. Developing a new product line	0.112	0.123	**0.723**	0.217	0.188
7. Selecting an outside vendor to supply raw material	0.386	0.110	0.211	0.107	**0.748**
8. Selecting the vendor to supply major components	0.199	0.175	0.031	0.174	**0.844**
9. Hiring a consultant in developing operating systems	0.265	0.114	0.131	**0.836**	0.252
10. Hiring a consultant for special studies	0.183	0.275	0.105	**0.849**	0.058
11. Increasing the planned level of advertising expenditures	**0.704**	0.201	0.211	0.315	-0.056
12. Changing the sales price of a major product	**0.768**	0.048	0.165	0.002	0.307
13. Changing the policy governing the level of inventories	**0.691**	0.109	0.021	0.094	0.422
14. Increasing the number of personnel employed in their units	**0.707**	0.262	-0.006	0.316	0.248
15. Increasing the number of non-exempt personnel	**0.706**	0.367	0.192	0.216	0.070
16. Promoting on of their lower-level managers	0.176	**0.900**	-0.013	0.145	0.071
17. Firing one of their direct subordinates	0.108	**0.822**	0.042	0.062	0.269
18. Hiring a new person from outside	0.294	**0.768**	0.094	0.085	0.253
19. Determining the size of a bonus to a direct subordinate	0.095	**0.678**	0.223	0.132	-0.155
Eigenvalues	3.126	2.971	2.211	1.972	1.922
% of variance	18.39%	17.48%	13.01%	11.60%	11.31%
Cumulative %	18.39%	35.86%	48.87%	60.47%	71.78%
n=103					

[a] Varimax Rotated Component Matrix with Kaiser Normalization. Rotation converged in 7 iterations.

Table 7 Results of principal component analysis (loadings) of survey questions on the extent of perceived environmental changes.[a]

	Components:			
Perceived environmental changes in:	*Competitors' actions*	*Customers, distributors, etc.*	*Supply sources*	*Internal environments*
1. Customer	0.415	**0.723**	0.224	-0.052
2. Distributor	0.141	**0.753**	-0.149	0.288
3. Government	0.023	**0.699**	0.214	0.047
4. Technical developments	**0.569**	0.016	0.374	0.024
5. Supply Sources: Capital markets	-0.092	0.164	**0.828**	0.086
6. Supply Sources: Raw material markets	0.217	0.049	**0.779**	0.044
8. Competitors actions: Product innovation	**0.759**	0.181	0.026	-0.212
9. Competitors actions: Advertising	**0.803**	0.072	0.023	0.279
10. Competitors actions: Distribution	**0.678**	0.186	0.046	0.373
11. Competitors actions: Pricing	**0.740**	0.113	-0.024	-0.141
12. Goals & strategies	0.014	0.141	-0.005	**0.668**
13. Interdependency	0.001	0.023	0.128	**0.762**
Eigenvalues:	3.522	1.584	1.315	1.074
% of variance:	29.35%	13.20%	10.96%	8.95%
Cumulative %	29.35%	42.55%	53.50%	62.45%
n=103				

[a] Varimax Rotated Component Matrix with Kaiser Normalization. Rotation converged in 5 iterations.

Table 8 Correlations between variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Financial controls	1													
2. Nonfinancial controls	0.388**	1												
3. Behavioral controls	0.336**	0.511**	1											
4. Geographical dispersion	0.097	0.209*	-.013	1										
Changes in:														
5. Competitors & technical developments	-0.029	.267**	0.156	0.161	1									
6. Customers, distributors & government	0.062	0.107	0.093	-.206*	0.000	1								
7. Supply sources	0.022	0.133	0.011	0.114	0.000	0.000	1							
8. Internal environments	-0.111	-0.035	0.010	0.112	0.000	0.000	0.000	1						
Decisions about:														
9. Prices & Expenditures	0.150	0.032	-0.148	0.058	-0.110	0.006	0.140	-0.015	1					
10. Personnel	-0.043	-0.026	-0.053	-0.075	-0.028	-0.035	0.074	0.054	0.000	1				
11. Products	-0.043	-0.101	0.192	-0.098	0.105	0.051	-0.118	0.294**	0.000	0.000	1			
12. Consultants	0.032	0.051	-0.025	0.158	-0.044	-0.326**	0.170	0.027	0.000	0.000	0.000	1		
13. Vendors	0.182	-0.012	0.008	-0.095	-0.009	-0.138	0.070	-0.259**	0.000	0.000	0.000	0.000	1	
14. Size	0.146	-0.003	-0.038	0.228*	0.247*	0.025	0.084	0.070	-0.015	-0.085	-0.198	0.172	0.032	1

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Table 9 Statistics from regressions of emphasis of controls on geographical dispersion, decentralization of decision-making rights, size, and PEC.

$$Y = b_0 + b_1 GEO + b_2 DEC_1 + b_3 DEC_2 + b_4 DEC_3 + b_5 DEC_4 + b_6 DEC_5 + b_7 PEC_1 + b_8 PEC_2 + b_9 PEC_3 + b_{10} PEC_4 + b_{11} SIZ + e$$

	Dependent variable:											
	Emphasis of Financial Control			*Emphasis of Nonfinancial Controls*			*Emphasis of Behavioral Controls*			*Relative Emphasis of FinancialControls*		
Independent variables:	*B*	*t*	*p*	*B*	*t*	*p*	*B*	*t*	p	*B*	*t*	p
Intercept	4.38	47.15	0.000	4.14	48.13	0.000	3.87	34.31	0.000	0.55	42.75	0.000
Geographical dispersion	0.12	0.94	n.s.	0.22	1.79	0.077	0.06	0.38	n.s.	-0.01	-0.33	n.s.
Decision-making decentralization of:												
Prices & expenditures	0.08	1.30	n.s	0.01	0.26	n.s.	-0.16	-2.14	0.036	0.02	2.30	0.006
Personnel	-0.00	-0.07	n.s.	0.00	0.06	n.s.	0.01	0.12	n.s.	-0.00	-0.29	n.s.
Products	-0.01	-0.14	n.s.	-0.13	-2.17	0.033	0.11	1.31	n.s.	-0.00	-0.11	n.s.
Consultants	0.03	0.49	n.s.	0.07	1.20	n.s.	0.02	0.20	n.s.	-0.00	-0.37	n.s.
Vendors	0.10	1.48	n.s.	0.02	0.39	n.s.	0.05	0.63	n.s.	0.01	0.98	n.s.
PEC in:												
Competitors	-0.04	-0.57	n.s.	0.15	2.36	0.021	0.11	1.29	n.s.	-0.03	-2.62	0.011
Customers etc.	0.06	0.85	n.s.	0.13	2.16	0.034	0.14	1.75	0.083	-0.02	-1.6	n.s.
Supply sources	-0.03	-0.53	n.s.	0.06	0.97	n.s.	0.07	0.90	n.s.	-0.02	-1.72	0.09
Internal environment	-0.05	-0.69	n.s	0.07	1.05	n.s.	-0.00	-0.04	n.s.	-0.01	-1.34	n.s.
Size	-0.00	1.05	n.s.	-0.00	-1.90	0.061	-0.00	-0.67	n.s.	0.00	2.36	0.021
R Square	0.10			0.21			0.14			0.28		
Adj R^2	-0.03			0.10			0.02			0.17		
F	0.8			1.87			1.17			2.70		
Sig.	n.s.			0.056			n.s.			0.005		
n	90			90		_	90			90		

Appendix 1: The English version of the survey questions

1a. How important do you perceive each of the following types of measures to be in the evaluation of foreign subsidiary managers? (Please circle the appropriate number on the 5-point scale below).

	Not at all important	Of little importance	Some what	Quite important	Very important
FINANCIAL CONTROLS (e.g., profit, return-on-investment, and residual income).....	1	2	3	4	5
NONFINANCIAL CONTROLS (market share, quality, production volume, etc.).....	1	2	3	4	5
BEHAVIORAL CONTROLS (e.g., *follow* rules & procedures *achieve* cost budgets & production standards, and *propose* expenditure programs).....	1	2	3	4	5

1b. How often do you arrange meetings with foreign subsidiary managers to discuss their performance on the following types of measures? (1=never, 2=seldom, 3=only if the performance is significantly below expectations, 4=quite often, and 5=regularly).

FINANCIAL CONTROLS	1	2	3	4	5
NONFINANCIAL CONTROLS	1	2	3	4	5
BEHAVIORAL CONTROLS.....	1	2	3	4	5

1c. To what extent do the following types of measures reflect whether foreign subsidiary managers are succeeding or failing with the business?

	Not at all	A little	Some what	Quite a lot	Very much
FINANCIAL CONTROLS.....	1	2	3	4	5
NONFINANCIAL CONTROLS 1		2	3	4	5
BEHAVIORAL CONTROLS	1	2	3	4	5

1d. How much attention do you pay to periodic (i.e., weekly or monthly) reports of results based on the following types of measures, when you evaluate the performance of foreign subsidiary managers?

FINANCIAL CONTROLS.....	1	2	3	4	5
NONFINANCIAL CONTROLS 1		2	3	4	5
BEHAVIORAL CONTROLS	1	2	3	4	5

1e. How much impact do good or bad results measured in the following types of measures have on the rated performance of foreign subsidiary managers?

FINANCIAL CONTROLS.....	1	2	3	4	5
NONFINANCIAL CONTROLS	1	2	3	4	5
BEHAVIORAL CONTROLS	1	2	3	4	5

2. To what extent are the following decisions made by foreign subsidiary managers?

	Not at all	A Little	Some what	Very much	Totally
Discontinuing a major existing product or product line	1	2	3	4	5
Redesigning products for a major existing product line	1	2	3	4	5
Expanding into new marketing territories for existing product(s)	1	2	3	4	5
Increasing Capacity with a new investment	1	2	3	4	5
Developing a major new product line	1	2	3	4	5
Buying from an outside vendor when the items required could be supplied by another unit in your corporation	1	2	3	4	5
Selecting an outside vendor to supply an important raw material or component used in operations	1	2	3	4	5
Selecting the vendor to supply major components for an approved capital expenditure project	1	2	3	4	5
Hiring a consultant for assistance in developing or modifying operating systems	1	2	3	4	5
Hiring a consultant for special studies	1	2	3	4	5
Increasing the planned level of expenditures for an advertising project	1	2	3	4	5
Changing the sales price of a major product	1	2	3	4	5
Changing the policy governing the level of investment in inventories	1	2	3	4	5
Increasing the number of personnel employed in their units	1	2	3	4	5
Increasing the number of non-exempt personnel employed in their units	1	2	3	4	5
Promoting one of their lower-level managers to a higher position	1	2	3	4	5
Firing one of their direct subordinates	1	2	3	4	5
Hiring a new person from outside	1	2	3	4	5
Determining the size of a bonus to be paid to a direct subordinate	1	2	3	4	5

3. To what extent do the following aspects change in your foreign subsidiaries?

	Never	Very rarely	Sometimes	Often	Very often
Customer buying patterns and requirements…….…….	1	2	3	4	5
Distributor attitudes and requirements…….…..……	1	2	3	4	5
Government regulations and reporting regulations……..……	1	2	3	4	5
Technical developments relevant to your business……..……	1	2	3	4	5
Supply sources:					
Capital markets……...…….. .	1	2	3	4	5
Raw material markets……..……	1	2	3	4	5
Labor markets……..……..……..….	1	2	3	4	5
Competitor actions:					
Product innovation……..……	1	2	3	4	5
Advertising…….……..…	1	2	3	4	5
Distribution……	1	2	3	4	5
Pricing……..…….	1	2	3	4	5
Impact of goals and strategies of the corporation…….……...	1	2	3	4	5
Interdependence with other units within the corporation…….	1	2	3	4	5
Overall change in business environment……..	1	2	3	4	5

Notes:

[1] Some examples include Hawkins (1965), McInnes (1971), Robbins and Stobaugh (1973), Person and Lessig (1979), Choi and Czechowicz, and Appleyard, Strong and Walton (1990).

[2] See Chenhall (2003) and Ittner and Larcker (1998) for detailed and extensive literature reviews.

[3] See Hawkins (1965), Mauriel (1969), McInnes (1971), Robbins & Stobaugh (1973), Person and Lessig (1979), Morsicato and Diamond (1980), Abdallah and Keller (1985), Appleyard, Strong, & Walton (1990), and Duangploy and Gray (1991).

[4] In addition, if not available from the other sources, some statistical data were collected by telephone calls, and e-mails.

[5] Note that Keating also measured survey items on performance rewarding, but they were not included, since that was beyond the scope of this study.

[6] Initially the use of both logistic and multiple regression analysis were considered, and the hypotheses were tested in both ways. Since the results did not differ significantly, multiple regression analysis was selected. Following a series of prior studies, the ordinal data was treated as interval. Studies show that this is an established method of analyzing data in social sciences, not very consequential, and widely agreed as good scaling by scientists, as many studies have shown (e.g. Labovitz 1967, 1970; Bohrnstedt & Carter, 1971; Asher, 1976; Nunnally, 1978).

[7] When variance inflation factors (VIP) were examined for predictors, no concern was found for multicollinearity: the simple correlations were quite low and all VIPs were less than 1.263 (i.e., substantially below 10, see Stevens, 2002). Existence of outliers and influential data points were checked with standard residuals and with Cook's distance. However, all standard residuals were below 3.0, indicating lack of outliers on y. All Cook's distances were below 0.194 indicating lack of influential data points.

[8] Multicollinearity was checked and no concern was found for it. In addition, all standardized residuals were below 2.685 (i.e., < 3.0), and all Cook's Distances below 0.142 (i.e. <1), indicating acceptable results.

[9] Multicollinearity was not found. Residual statistics indicated that all standardized residuals were below 2.122 (i.e., <3.0), and Cook's Distances below 0.166 (i.e., <1.0), and hence acceptable.